KUTUZOV, L.G.; RYSIN, V.I., inzh.; SHIRKEVICH, N.S., inzh.; KUZNETSOV, N.D., inzh.; FILIMONTSEV, I.S., inzh.; PAPINOVA, O.I., inzh.; KHOLODKOV, N.Ye., inzh.; ASTAFUROV, O.A.; SASS, K.Z.; SASIM, A.S.; SAFAROVA, Ye.S. [deceased]

Exchange of practices by the enterprises of economic councils. Torf. prom. 40 no.7:34-38 '63. (MIRA 17:1)

1. Gusevskoye torfopredpriyatiye Verkhne-Volzhskogo soveta narodnogo khozyaystva (for Kutuzov). 2. Torfopredpriyatiye Vasilevichi II Belorusskogo soveta narodnogo khozyaystva (for Shirkevich, Filimontsev, Papinova, Kholodkov). 3. Svyavskiy lesnoy khimicheskiy kombinat Gor'kovskoy obl. (for Kuznetsov). 4. Fornosovskiy torfobriketnyy zavod Leningradskogo gosudarstvennogo tresta torfyanoy promyshlennosti (for Sass).

BALON, I.D., kand.tekhn.nauk; ROMANENKO, N.T., inzh.; BOLKUNOV, Ye.P., inzh.; ASTAFUROV, P.I., inzh.; VOLOVIK, A.V., inzh.; TULUYEVSKAYA, T.A., inzh.

Intensification of ferromanganese smelting in large blast furnaces. Met. i gornorud. prom. no.3:8-14 My-Je '63. (MIRA 17:1)

1. Ukrainskiy institut metallov (for Balon, Romanenko). 2. Zavod "Zaporozhstal'" (for Bolkunov, Astafurov, Volovik, Tuluyevskaya).

BALON, I.D., kand.tekhn.nauk; ROMANENKO, N.T., inzh.; YUPKO, L.D., inzh.; BOLKUNOV, Ye.P., inzh.; TULUYEVSKAYA, T.A., inzh.; ASTAFUROV, P.I., inzh.; VOLOVIK, A.V., inzh. Prinimali uchastiye: BAKAYEV, A.I.; VOKHNIK, A.R.; KOLOS, V.D.; KAYSTRO N.P. [deceased]; LITVINENKO, V.I.; MAKARCHENKO, N.M.; ONOPRIYENKO, V.P.; PALAGUTA, V.P.; PIKA, V.S.; RAGIN, B.I.; ROMANCHENKO, Ye.I.; SAYENKO, S.D.; STOLYAR, V.V.; SKORIK, N.M.; TOROPENKO, P.D.

Characteristics of making ferromanganese in large capacity blast furnaces and the effect of slag conditions on basic technical and economic indices. Stal' 23 no.12:1069-1073 D '63. (MIRA 17:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut metallov i zavod "Zaporozhstal'".

ASTAFUROV, V.G.; APURIN, I.G.

Secondary oil recovery methods used in the Malgobek field. Neftianik 2 no.6:12-14 Je '57. (MIRA 10:10)

1. Nachal'nik planovo-ekonomicheskogo otdela neftepromyslovogo upravleniya Malgobekneft' (for Astafurov). 2. Nachal'nik finansovogo otdela Neftepromyslovogo upravleniya Malgobekneft' (for Apurin).
(Ossetia--Secondary recovery of oil)

S/128/60/000/004/005/006
A104/A133

AUTHORS: Talanov, P. I., and Astafurova, N. I.

TITLE: The pecularities of cerium modification of cast iron

PERIODICAL: Liteynoye proizvodstvo, no. 4, 1960, 42-44

TEXT: In view of technological difficulties in the production of modular cast iron modified with magnesium, experiments are being carried out to modify cast iron with cerium [Savitskiy, Ye. U - Ref. 1: Redkiye metally i splavy (Rare Earth Metals and Alloys), Metallurgizdat, 1959; Shkol'nikov, E. M., Bondarenko, L. G., Zakharov, V. A., Chichagova, N. P. - Ref. 2: "Liteynoye proizvodstvo", no. 2, 1960]. During experiments cerium was added as misch metal (56% Ce, 18% La, up to 1.6% Fe, 0.056% Zn, 0.026% Cl, 0.02% S, 0.015% P, the rest being Nd, Pr, Sm). Cast iron was smelted in a blast cupola, charged until the required chemical composition was attained and overheated to 1,500 - 1,550°C in a h-f inductive furnace. Hypoeutectic cast iron was obtained by the addition of low-carbon steel, a hypereutectic composition by the addition of silver graphite. The cast iron was then cooled to 1,380 - 1,400°C and modified. The misch metal was added with the aid of

Card 1/6

The pecularities of cerium...

a perforated tube. After two minutes the cast iron was stirred, the slag removed and 0.3% Si75 added. There were no cast iron ejections and its temperature increased by 20 - 30°C. The chemical compositions of the obtained cast irons and results of mechanical tests are shown in Table 1. It was found that their tensile strength is higher than their bending strength. At equal quantities of the modifier the relative hardening of hypereutectic cast irons is higher than that of hypoeutectic ones. Microstructural tests showed that the modification with misch metal does not affect the basic metal structure which consisted of pearlite and 5 - 10% ferrite in all cases. In hypoeutectic cast iron spheroidal graphite was found after addition of a 0.3% modifier, in hypereutectic cast iron after 0.5%. However, even the addition of 0.7% modifier failed to achieve a complete spheroidization of graphite, due to the increased amount of sulfur and its reaction with cerium. To eliminate the effect of sulfur, additional smeltings of cast iron were carried out under the same conditions as before. The chemical composition and the results of mechanical tests are given in Table 2. Modification with misch metal does not affect the casting properties of cast iron. Its fluidity increases and reaches its maximum at 0.5% of misch metal. Larger quantities

of modifier decrease the fluidity due to the formation of a great amount of ceric oxide in the metal. Linear shrinkage varied between 0.7 - 1.0%. Since the modification of cast iron with cerium proved superior to magnesium modification, further tests included the combined modification with magnesium and misch metal of desulfurized cast iron. It was established that simultaneous addition of solid magnesium and misch metal reduces the pyroeffect. The chemical composition and the mechanical properties of the tested cast irons are shown in Table 3. The combined modification with separate addition of magnesium and misch metal improves the quality of cast iron. Although the spheroidizing ability of the misch metal is inferior to that of magnesium, it neutralizes the adverse effect of titanium, bismuth etc. during the combined modification. There are 3 tables, 3 figures and 2 Soviet-bloc references.

The pecularities of cerium...

Table 1

Таблица 1

1) Добавка мишметалла в %	2) Химический состав в % $C_{об}$	$C_{св}$	Si	Mn	P	S	3) Углеродный эквивалент $C_э$	4) Предел прочности в кг/мм² 5) при растяжении	6) при изгибе
—	3,99	0,41	2,17	0,63	0,16	0,08	4,7	10,6	25,1
0,3	3,98	0,50	2,15	0,64	0,15	0,08	4,7	18,2	38,1
0,4	3,98	0,62	2,15	0,63	0,15	0,06	4,7	21,5	42,3
0,5	3,95	0,81	2,11	0,65	0,14	0,05	4,6	26,0	46,3
0,6	3,95	0,83	2,09	0,66	0,15	0,04	4,6	29,0	54,2
0,7	3,94	0,86	2,05	0,65	0,15	0,03	4,6	29,1	56,1
—	2,62	0,71	1,86	0,59	0,12	0,07	3,2	25,8	45,3
0,3	2,62	0,84	1,84	0,60	0,11	0,07	3,2	33,3	62,4
0,4	2,61	0,84	1,86	0,52	0,12	0,07	3,2	39,4	64,0
0,5	2,59	0,90	1,84	0,51	0,13	0,05	3,2	36,0	61,5
0,6	2,50	0,89	1,75	0,52	0,11	0,06	3,1	38,2	60,0
0,7	2,53	0,80	1,80	0,57	0,11	0,06	3,1	33,5	61,0

Table 1:

(1) misch metal addition in %;
(2) chemical composition in %;
(3) carbon equivalent;
(4) strength limit in kg/mm²;
(5) tensile strength limit;
(6) bending strength limit.

The pecularities of cerium...

Table 2:

(1) misch metal addition in %;
(2) chemical composition in %;
(3) carbon equivalent;
(4) strength limit in kg/mm^2;
(5) tensile strength limit;
(6) bending strength limit.

Table 2

Таблица 2

1) Добавка мишметалла в %	2) Химический состав в %					3) Углеродный эквивалент $C_э$	4) Предел прочности в кг/мм^2	
	$C_{об}$	Si	Mn	P	S		5) при растяжении	6) при изгибе
—	26,5	1,62	0,60	0,10	0,03	3,2	26,4	46,2
0,3	2,63	1,54	0,52	0,10	0,02	3,2	40,4	66,1
0,4	2,65	1,53	0,55	0,11	0,01	3,2	39,3	67,0
0,5	2,58	1,81	0,56	0,10	0,01	3,2	39,5	62,5
0,6	2,56	1,81	0,57	0,11	0,01	3,1	40,4	64,4

Card 5/6

Table 3

Таблица 3

1) Добавка модификатора в %	2) Химический состав в % $C_{об}$	Si	Mn	P	S	3) Углеродный эквивалент $C_э$	4) Предел прочности в кг/мм² 5) при растяжении	6) при изгибе
7) Без модификатора . . .	2,7	2,21	0,69	0,11	0,01	3,4	25,9	46,1
8) 0,4 мишметалла	2,71	2,21	0,60	0,12	0,009	3,4	33,3	60,4
9) 0,4 магния . .	2,69	2,25	0,58	0,10	0,009	3,4	46,1	69,3
10) 0,2 мишметалла + 0,2 магния . .	2,69	2,20	0,55	0,11	0,003	3,4	50,9	71,2

(1) modifier addition in %;
(2) chemical composition in %;
(3) carbon equivalent;
(4) strength limit in kg/mm²;
(5) tensile strength limit;
(6) bending strength limit;
(7) without modifier;
(8) 0.4 misch metal;
(9) 0.4 magnesium;
(10) 0.2 misch metal + 0.2 magnesium.

S/148/61/000/005/014/015
E071/E135

AUTHORS: Talanov, P.I., and Astafurova, N.I.

TITLE: An investigation of the technological conditions of the inoculation of cast iron with a cerium alloy

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1961, No.5, pp. 177-183

TEXT: The influence was investigated of the temperature to which cast iron was initially heated up and the temperature at which it was subsequently inoculated with a cerium alloy on the properties of low sulphur, low phosphorus iron with an eutecticity of 0.9 and 1.0. A cerium alloy FMTs-6 (50.4% Ce, 3.3 Fe, 6.3 Mg, remainder other rare earth elements) and the following two types of iron:

Eutecticity	C	Si	Mn	P	S
0.9	3.25	2.20	0.50	0.10	0.04
1.0	3.60	2.85	0.60	0.12	0.06

were used for the experiments. Iron was melted in a 50 kg induction furnace, heated to 1550 °C, transferred into a preheated ladle where it was retained to a given inoculation temperature (1350, 1400, 1450

S/148/61/000/005/014/015
E071/E135

An investigation of the technological conditions of the inoculation of cast iron with a cerium alloy

and 1500 °C). The inoculant was introduced on a rod in an amount of 0.5% of cerium alloy and 0.4% of ferrosilicon. The iron was teemed into semis of 50 and 100 mm diameter. The influence of the inoculation temperature was evaluated on the basis of changes in the tensile and bending strength. The coefficients of quasiisotropy were calculated from the equation

$$\frac{\sigma_D}{\sigma_d} = \left(\frac{D}{d}\right)^{-\alpha}$$

where σ_D and σ_d - tensile strength (or bending) in two cross-sections under comparison; D and d - corresponding diameters; α - coefficient of quasiisotropy, designated by a for tensile and by b for bending strength. It was found that an increase in the inoculation temperature to 1400 °C has no practical influence on the properties, but with a further increase in the temperature a considerable increase in the strength characteristics as well as of the coefficients of quasiisotropy a and b was obtained.
Card 2/5

S/148/61/000/005/014/015
E071/E135

An investigation of the technological conditions of the inoculation of cast iron with a cerium alloy

To determine the influence of the initial heating temperature, experiments were carried out in which the iron was heated to 1500, 1550 and 1600 °C, transferred into a ladle, retained to a temperature of 1460 ± 15 °C and then inoculated. Semis were cast at a temperature of 1340-1320 °C. With increasing heating temperature, the composition of the iron remained unchanged, with the exception of carbon (which was decreasing). With increasing heating temperature, the absolute values of the strength characteristics change only a little but the coefficients of quasi-isotropy improve. The positive influence of the preliminary heating of iron to a higher temperature appears to be associated with an improvement in the degassing, coagulation and flotation of inclusions and solution of graphite foam which always interferes with the formation of regularly shaped globular graphite during subsequent inoculation. More than 50 industrial heats produced in various furnaces confirmed the laboratory results. Cupola iron of a similar composition, the temperature of which in the runner was

TALANOV, P.I.; ASTAFUROVA, N.I.

Brittleness of cast iron containing cerium. Lit. proizv. no.3:27-28 Mr '61. (MIRA 14:6)

(Cast iron--Brittleness)
(Cerium)

GRINENKO, V.I., inzh.; BELKIN, S.A., inzh.; ASTAFUROVA, N.I., kand.tekhn.nauk

Welding nonrotatable pipe joints of Kh19N9T steel by the automatic pressure method. Svar. proizv. no.10:27-29 O '63. (MIRA 16:11)

ASHRAPOV, A.

ASHRAPOV, A. Miatlinsk (Kratkii ocherk). O-E,Cheliabinsk, 1957. 32 p.

SO: LC, Soviet Geography, Part II, 1958, Unclassified

ASTAF'YEV, A.

High quality of manufactured objects and perfect organization of production. NTO 2 no.6:30-32 Je '60. (MIRA 14:2)

1. Zamestitel' predsedatelya Komiteta Vsesoyuznogo soveta nauchno-tekhnicheskogo obshchestva po nadezhnosti i kontrolyu kachestva.
(Industrial management)

ASTAF'YEV, A. A.

Astaf'yev, A. A. -- "Selection of the Grade of Steel and Investigation of Methods of Heat Treatment of Rollers for Cold Rolling." Cand Tech Sci, Sci Res Inst of Technology and Machine Building, Moscow 1953. (Referativnyy Zhurnal--Khimiya, No 1, Jan 54)

So: SUM 168, 22 July 1954

ASTAF'YEV, A.A., kandidat tekhnicheskikh nauk; YERMAKOV, K.A., inzhener.

Rapid heating in flame furnaces for the heat treatment of large-size parts. Trudy TSNIITMASH no.64:5-31 '54. (MLRA 9:1)
(Steel--Heat treatment)

Astafyev, A.A.

USSR/Metallurgy - Metal treating

Card 1/1 Pub. 128 - 15/25

Authors : Astafyev, A. A., Cand. Tech. Sc., and Yermakov, K. A., Engineer

Title : High-speed heating of large forged pieces during thermal treatment

Periodical : Vest. mash. 35/4, 62-64, Apr 1955

Abstract : Experiments were conducted to determine the effect of temperature (hearth temperature) on the rate of heating of large forged pieces made of 9X steel 300 mm in diameter, which were introduced into the hearth at 850, 900, 950, and 1000°. It was established that an increase in hearth temperature from 850 to 1000° reduces the heating time from 210 to 83 min. and that the heating of the forged piece at a hearth temperature of 950 - 1000° warrant rapid and uniform heating of the entire piece. Graphs; drawing.

Institution : .....

Submitted : .....

ASTAF'YEV, A.A.

11231* Effective Procedures for Quench-Hardening Large Forgings of Structural Steel. Ratsional'nyye rezhimy zakalki krupnykh pokovok iz konstruktsionnoi stali. (Russian.) A. A. Astaf'ev and K. A. Ermakov. *Metallovedenie i Obrabotka Metallov*, 1956, no. 4, Apr. 1956, p. 35-45.

Mechanical properties of the steel in relation to temperature and time of isothermal transformation. Kinetics of transformation of supercooled austenite. Quenching temperatures and media. Graphs, micrograph, diagram. 6 ref.

1. Tsentral'nyy nauchno-issledovatel'skiy inst. tekhnologii i mashinostroyeniya.
(Tempering) (Steel forgings--Heat treatment)

ASTAF'YEV, A.A.

129-11-1/7

AUTHOR: Astaf'yev, A. A., Candidate of Technical Sciences.

TITLE: Soviet achievements in the field of metallurgy and metals technology. (Uspekhi Sovetskogo Metallovedeniya).

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1957, No.11, pp. 2-17 (USSR)

ABSTRACT: General review of Soviet achievements and work in the field of metallurgy and metals technology. The information given in the paper does not relate exclusively to post-war developments but also includes some pre-war information. Particular attention is paid to problems relating to high temperature steels. It can be assumed that maximum temperature resistance will be achieved for a steel of a composition such that the content of the alloying elements corresponds to their limit solubility in the solid solution, (at the hardening temperature) or a slight excess of this solubility. During operation of such an alloy in the range of high temperatures it is the structural factor which is the determining one, i.e. the conditions of separation of the excess phase and the speed of subsequent coagulation. For higher heat resistance a fine lamellar shape of the separates is desirable. High temperature alloys should be so alloyed that at the hardening

Card 1/9

Soviet achievements in the field of metallurgy and metals technology.

only from the point of view of long duration strength and creep but also from the point of view of resistance to vibrations. The author enumerates the various nickel and iron base steels used in the Soviet Union for turbine blades and other highly stressed components and also the austenitic steels used for highly stressed castings. Furthermore, the problems of welding austenitic castings are discussed and also the technology of manufacturing large size austenitic steel rotors by combining welding with forging; by means of this method it is possible to simplify very considerably the manufacture of large rotors. Serious and successful attempts are being made to use non-austenitic steels for components operating at 550 to 600° C, i.e. chromium stainless steels and pearlitic high temperature steels with a total content of up to 3 to 4% of alloying elements. A number of steels of these categories have been developed and good results were obtained with some of them and some of these results are given. The developments in the field of structural steels are also reviewed. Much attention is being paid to the utilisation of arsenic containing ores from the Kerch deposits and recommendations are being worked out determining the permissible limits of

Soviet achievements in the field of metallurgy and metals technology.

of the study of phase transformations in steels and alloys. Of considerable importance for understanding the process of formation of phases is the principle of dimensional and directional crystallisation proposed by S. T. Konobeyevskiy and P. D. Dankov; in the case of crystallisation in an anisotropic medium, the minimum surface energy is ensured if there is a maximum analogy in the distribution of atoms on the contacting faces of the new and the old phases. The phase transformations are greatly affected by the differences in the specific volumes of the old and the new phases. On the basis of the fundamental relations governing crystallisation, it was possible to study theoretically more thoroughly the individual problems of phase transformation during heating and cooling of steel. Work of V. D. Sadovskiy and his team led to a considerable revision of existing conceptions on the mechanism of recrystallisation. It was found that in heating slightly above the critical point the principle of orientated crystallisation of the new fine grains relatives to the old ones is obeyed and this leads to intragranular texture. During cooling of steel fundamentally two types of transformation can take place, namely, diffusional and non-diffusional (martensitic) transformations.

Soviet achievements in the field of metallurgy and metals technology.

S. S. Steynberg and A. P. Gulyayev; they have proved conclusively that martensite is a solid solution of carbon in α-iron. According to the results of A.P.Gulyayev and his team the martensitic transformation is greatly influenced by internal stresses, particularly by Type II stresses. Results relating to transformation during tempering have shown that during the first stage of tempering of steel, when the temperature does not exceed 170 to 200°C, a decomposition takes place of the tetragonal martensite and carbon separates from the α-iron in the form of carbide. Following that a metastable state sets in at which the separated out dispersed particles in the saturated solid solution are in equilibrium for a certain amount of time. The metastable (colloidal) equilibrium is disturbed by diffusion processes; for tempering temperatures below 170 to 200°C the diffusion processes are very limited and, therefore, the colloidal equilibrium is sufficiently stable. Martensite decomposition during tempering represents a particular case of the general process of decomposition of over-saturated solid solutions. The main trend at present in developing heat treatment

 techniques in the Soviet Union is the use of mechanization

Soviet achievements in the field of metallurgy and metals technology.

cycles of cooling down to 250-300°C which prevents the formation of such defects. Considerable progress has been achieved in heat treatment by means of 50 c.p.s. currents; by using the developed methods it is possible, in the case of hardened rolls, to obtain an active surface layer of 10 to 15 mm thickness with a Shore hardness of over 95 Shore units after hardening and a continuous transition to the non-hardened core. In the field of chemical-heat treatment, the results of the study of the kinetics of phase transformations effected by N. A. Minkevich, Yu. M. Lakhtin, S. K. Il'inskiy and A. N. Minkevich are of interest from the point of view of cyaniding, nitriding etc. and various other work. It is pointed out that an interesting process is also that developed by A. D. Asonov, K. Z. Shepelyakov and P. A. Lankin at the imeni Likhachev Works for high speed cementation during heating by means of high frequency currents; the process is effected on gears during heating to 1050-1100°C and if titanium containing steels are used which have a fine grain structure, it is possible to obtain a good structure without excessive heating and also a good combination of mechanical properties.

Card 9/9

AVAILABLE: Library of Congress

Developing an accelerated heating method ...

over the cross section. Accelerated heating conditions of large-size forgings have been introduced at the NKMZ (Kramatorsk). The application of these conditions cuts down the heat-treatment cycle by 30-35%. There are 26 figures and 6 references.

N. Il'ina

[Abstracter's note: Complete translation]

Card 2/2

18.7100

SOV/129-60-2-8/13

AUTHORS: Astaf'yev, A. I., Minasaryan, A. A. (Candidates of Technical Sciences), Kondrashev, A. I. (Engineer)

TITLE: Cooling Rates From Tempering Temperatures for Forgings

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1960, Nr 2, pp 42-47 (USSR)

ABSTRACT: When heat-treating forgings for critical applications, slow cooling rates from tempering temperatures were used to obtain minimal residual stresses. However, such rates prolong the production cycle and decrease productivity of heat treatment shops. Therefore, it was necessary to determine the optimal cooling rates providing minimal residual stresses and high mechanical properties for such forgings. Specimens 75 mm in diam, 190 mm long, were prepared from steel 34KhNMM containing C 0.37; Mn 0.54; Si 0.34; Ni 2.44; Cr 0.99; Mo 0.2[illegible]%. Preliminary heat treatment

Card 1/9

and 40 KhN 500 mm in diam were normalized from 850-860° C, tempered at 650-700° C, and cooled with the furnace. Composition of these steels is given in Table 1.

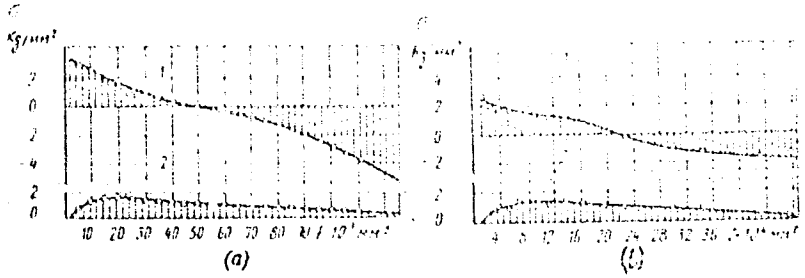
Designation of Steel	Chemical composition, %						
	C	Mn	Si	S	P	Cr	Ni
40 Kh	0,40	0,65	0,28	0,030	0,027	1,08	0,30
40 KhN	0,43	0,62	0,30	0,020	0,032	0,71	1,28

Subsequently, discs were quenched in water through oil and tempered, using special fixture shown in Fig. 1.

Card 3/4

cooling with the furnace to 400° C and subsequent air cooling. Such rates decrease duration of cooling, as compared with complete cooling with the furnace, to 1/3-1/4, and result in permissible residual stresses up to 4 kg/mm² (see Fig. 3). These rates are used for large forgings at Novo-Kramatorskiy Machine Building Plant in Kramatorsk (Novo-Kramatorskiy mashinostroitel'nyy zavod).

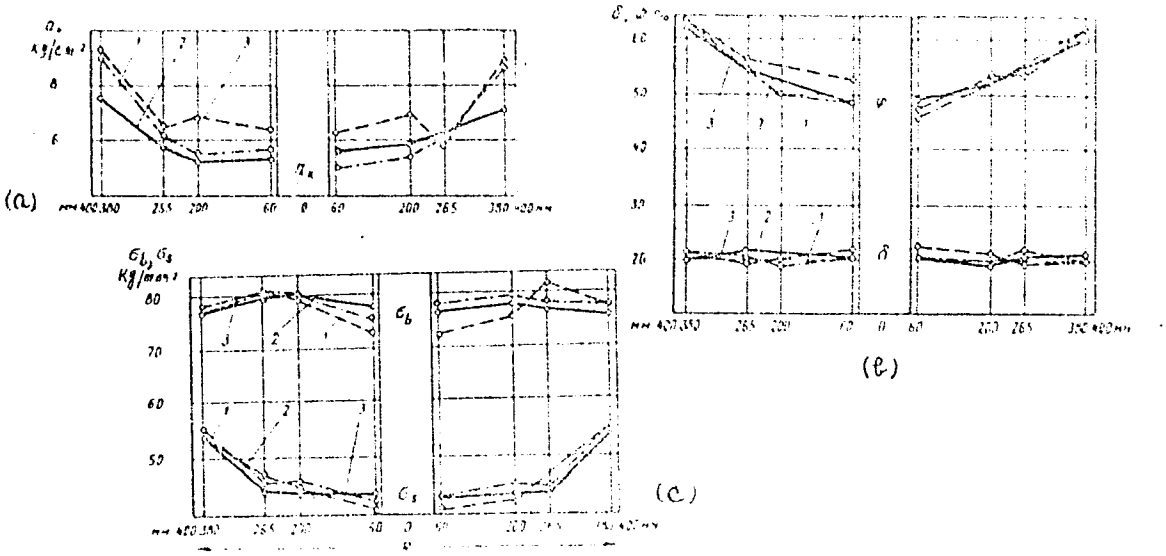
Cooling Rates From Temperat. Temperatures
For Forgings



Card 6/9 See Card 7/9 For Caption on Fig. 4.

Cooling Rates From Tempering Temperature [illegible]
for Forgings

77[illegible]
SOV/129-60-2-8/13



Card 8/9

See Card 9/9 for Caption to Fig. 5.

BR

37470
S/129/62/000/005/001/011
E111/E135

11716

AUTHOR: Astaf'yev, A.A., Candidate of Technical Sciences

TITLE: Rational conditions for annealing large forgings after forging

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no.5, 1962, 2-7

TEXT: Report on investigations of conditions leading to flake formation in type 34ХН3М (34KhN3M) steel in relation to heat treatment (Author's certificate no.22175 of March 1, 1961). The kinetics of hydrogen evolution at various temperatures up to about 800 °C from steel in the alpha and gamma states, from technical-grade iron, and 40ХН (40KhN) pearlitic steels, were studied. In some experiments the effect of applying a tensile stress equivalent to 0.2-0.8 of the yield-point stress or a compressive stress of 38 kg/mm^2 was studied. From these experiments, tests on forgings up to 1200 mm in diameter and studies of decomposition of super-cooled austenite, the author draws the following main conclusions. For large forgings the

Card 1/3

S/129/62/000/005/001/011
E111/E135

Rational conditions for ...

650 to 500 °C, and then rapidly. Final cooling should be at under 40 °C/hour to 400 °C, 15-20 to 150-200 °C, and then in air.
There are 7 figures and 2 tables.

ASSOCIATION: TsNIITMASh

Card 3/3

S/129/63/000/003/006/009
E193/E383

AUTHORS: Astaf'yev, A.A., Abramova, V.P., Kondrashev, A.I., and Manuylova, V.P.

TITLE: Combined forging and hardening of large parts

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no. 3, 1963, 24 - 28

TEXT: The object of the present investigation, conducted by TsNIITMASh in cooperation with the Novo-Kramatorskiy mashinostroitel'nyy zavod (Novo-Kramatorsk Machine-building Works), was to explore the possibility of hardening large forgings of carbon and low-alloy steels by quenching directly after the hot-forging operation. The experiments were conducted on stepped forgings, 300 and 500 mm in diameter, made from basic open-hearth steel 45 and basic steel 40XH (40KhN), smelted in an electric furnace. The blanks were preheated to 1 200 °C. The forging operation lasted 22 - 48 min, the reduction given being 5 and 1.9 for steps of 300 and 500 m in diameter, respectively. The following three variants of hardening treatment were studied: 1 - quenching immediately after the forging operation; 2 - quenching after holding the

Combined forging ....

forging at 850 °C for 4 hours (steel 45) or 1.5 h (steel 40KhN); 3 - quenching after forging, tempering, reheating and quenching again. Steel 45 forgings were water-quenched (cooling time - 15-20 min); steel 40KhN test pieces were oil-quenched (cooling time 63 - 76 min) and transferred to a tempering furnace when their surface temperature reached 200 °C. Both steels were tempered at 640-660 °C for 20 and 45 hours; experiments were also conducted on steel 40KhN, tempered at 550-570 °C for 25 hours. After tempering the forgings were cooled to 400 °C at a cooling rate of 40 °C/h and then to room temperature at 30 °C/h; the specimens tempered for 45 h were cooled in air. After the heat treatment test pieces were cut from the surface layer, from the region R/3 distant from the surface and from the central region of the forging; these were used for metallographic determination and for determining the mechanical properties of the forging. Typical results obtained for steel 45 forgings are reproduced in Fig. 1, where the UTS (σ_b, kg/mm^2), yield point (σ_s, kg/mm^2) impact strength (a_k, kgm/cm^2), reduction in area (ψ, %) and elongation (δ, %) are plotted against the distance (R, mm) from

Card 2/5

Combined forging ....

the forging surface; curves 1-3 relate to forgings quenched immediately after forging, curves 4 to forgings quenched after 4 h at 850 °C and curves 5 to material quenched after a second reheating (tempering at 640-660 °C); diagrams a and б were constructed for steps 300 and 500 mm in diameter, respectively. Conclusions: 1) in the case of steel 45 forgings up to 500 mm in diameter, quenching immediately after hot forging does not give rise to flaking, irrespective of which part of the ingot is used for producing the forging. The same applies to steel 40KhN forgings of up to 300 mm in diameter. Flaking can, however, occur in steel 40KhN forgings of 500 mm in diameter, made from the top part of the ingot and quenched immediately after forging. 2) The mechanical properties of steel 45 forgings of up to 300 mm in diameter, quenched immediately after hot forging and given a high-temperature tempering, meet the requirements imposed by service conditions. 3) The results of the present investigation provide grounds for recommending that quenching after forging be used as the final heat treatment for medium-carbon steel forgings of up to 300 mm in diameter. In the case of steels 40KhN, 40Kh (40Kh), 34KhM (34KhM), 50G (50G), 60G (60G), 40KhNM (40KhNM) et al quenching immediately

Combined forging ....

after hot forging should be applied as a preliminary heat treatment instead of prolonged annealing which is normally used after forging to prevent flaking. 4) Field trials conducted at the Novo-Kramatorsk Machine-building Works on forgings of up to 400 mm in diameter yielded satisfactory results. There are 3 figures.

ASSOCIATIONS: TsNIITMASh
Novo-Kramatorskiy zavod (Novo-Kramatorsk Works)

ASTAF'YEV, A.A., kand.tekhn.nauk; KOVSHIKOV, Ye.K., inzh.; TAVADZE, F.N., akademik

Rapid heating of forging dies for hardening. Metalloved. i term. obr. met. no.10:41-44 O '62. (MIRA 15:10)

1. AN Gruzinskoy SSR (for Tavadze).
(Tool steel—Hardening)

ASTAF'YEV, A.A.; ABRAMOVA, V.P.; KONDRASHEV, A.I.; MANUYLOVA, V.P.

Hardening of large forgings from the forging temperature. Metalloved. i term. obr. met. no.3:24-28 Mr '63. (MIRA 16:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya i Novo-Kramatorskiy mashinostroitel'nyy zavod.
(Steel forgings) (Steel—Hardening)

ASTAF'YEV, A.D., kandidat meditsinskikh nauk

Determination of humidity of small quantities of air under clothing. Trudy AMN SSSR 30:40-49 '53. (MLRA 8:1)

(CLOTHING,
humidity of air trapped under clothing)
(AIR,
humidity of air trapped under clothing)
(HUMIDITY,
of air trapped under clothing)

ASTAF'YEV, A. D., kandidat meditsinskikh nauk

Clothing and gas exchange. Trudy AMN SSSR 30:49-58 '53.
(MLRA 8:1)

(METABOLISM,
oxygen consumption, eff. of clothing)
(CLOTHING,
role in oxygen consumption)

ASTAF'YEV, A.D., kandidat meditsinskikh nauk; SLONIMSKIY, S.I., doktor meditsinskikh nauk

Microclimate of men's clothing. Trudy AMN SSSR 30:74-85 '53.
(CLOTHING, (MLRA 8:1)
microclimate)

L 44065-66 EWT(m)/T/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/DJ/JH

ACC NR: AP6030590 (A, N) SOURCE CODE: UR/0413/66/000/016/0073/0074

INVENTOR: Malenok, F. T.; Voronov, I. A.; Chernyak, S. N.; Levitskiy, V. Kh; Bekhelev, V. P.; Astaf'yev, A. D.; Tserering, L. A.; Neyman, Z. Ya.; Treshchevskaya, R. A.

ORG: none

TITLE: Lubricant for high-speed rolling of aluminum foil. Class 23, No. 184998

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966, 73-74

TOPIC TAGS: aluminum foil, aluminum foil rolling, high speed rolling, rolling lubricant, METAL ROLLING, HYDROCARBON LUBRICANT

ABSTRACT: This Author Certificate introduces a petroleum product-base lubricant containing up to 1.0% oleic acid for high-speed rolling of aluminum foil. To obtain high-quality surface finish of the foil without washing it before annealing, DC diesel fuel oil (GOST 4749-49) is used as the lubricant base. [MS]

SUB CODE: 11, 13/ SUBM DATE: 28Apr65/ ATD PRESS: 5076

Card 1/1 UDC: 621.892.2

ALEKSEYEV, Yu.V.; ASTAF'YEV, A.F.; POPOV, O.A.; Prinimali uchastiye: AGAYEV, A.G.; REBROV, A.G.; KULAKOV, N.N.

Adopting the roasting of nickel concentrates in a fluidized bed at the "Severonikel'" Combine. TSvet. met. 36 no.7:35-42 Jl '63. (MIRA 16:8)

(Nickel--Metallurgy) (Fluidization)

ASTAF'YEV, A.N., inzh.

Steam-turbine moisture traps used by turbine builders abroad.
Energomashinostroenie 4 no.11:47-48 N '58. (MIRA 11:11)
(Steam turbines)

ASTAF'YEV, A.N., inzh.

Some results obtained in experimental investigations of steam turbine moisture traps. Energomashinostroenie 6 no.2:32-33 F '60. (MIRA 13:5)

(Steam turbines)

ASTAF'YEV, A.N., kand.tekhn.nauk; TERENT'YEV, I.K., kand.tekhn.nauk

Testing of the moisture traps of a condensing steam turbine.
Energomashinostroenie 10 no.3:45-46 Mr '64. (MIRA 17:4)

ASTAF'YEV, A. P. Cand. Tech. Sci.

Dissertation: "Effect of Certain Hydrocartons and their Chlorine Derivatives on Explosive Properties of Hydrogen-Air Mixtures." Moscow Order of Lenin Chemicotechnological Inst imeni D. I. Mendeleyev, 19 Feb 47.

SO: Vechernyaya Moskva, Feb, 1947 (Project #17836)

ASTAF'YEV, A. S.

"Characteristics of Change in the Mechanical Properties of Some Low-Alloy Construction Steels in Welding." Sub 8 Jun 51, Moscow Order of the Labor Red Banner Higher Technical School imeni Bauman.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55.

ASTAF'YEV, A.S.

AID P - 4836

Subject : USSR/Engineering

Card 1/1 Pub. 11 - 9/13

Authors : Astaf'yev, A. S. and A. V. Russiyan

Title : Welding of the EI-530, EI-628 and EI-629 austenitic stainless steels.

Periodical : Avtom. svar., 3, 72-78, Mr 1956

Abstract : The authors describe two methods of welding pipes made of stainless steels, comparing automatic welding with a fusing agent and manual electric arc welding, and illustrating the feasibility of welding these steels up to 2 mm thick and giving test data. Three tables and 6 photos.

Institution : Central Scientific Research Institute of Ferrous Metallurgy (TsNIIChERMET).

Submitted : 28 0 1955

ASTAF'YEV, A.S., kandidat tekhnicheskikh nauk.

Repair by electric welding of a cast-iron hammer cylinder.
Stal' 16 no.7:656-658 Jl '56. (MLRA 9:9)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii.
(Pneumatic machinery) (Cast iron--Welding)

ASTAF'YEV, A.S.

3
1-4-E 2c

18

Effect of welding on the properties of heat-treated open steel. I. A. S. Astaf'ev. *Stal'* 17, 158-62(1957).—A sheet 11.7 mm. thick containing C 0.20, Mn 0.48, S 0.023, P 0.023%, and Si trace was brine quenched from 900° and drawn at 620° or cooled with the furnace from 900 to 500° and then in air. Specimens were electrically butt welded and the base metal, bead, and transition zone tested at +20 to −60° for impact strength, fracture characteristics, angle of bend, hardness, and structure in the as-welded state and after standard aging. The annealed base metal became brittle at −10° before aging and failed at +20° after aging, while the heat-treated one remained partially ductile at −40°. The properties of the bead and of the transition zone are affected by the rate of heat application in welding, in this case 8160 cal./cm. providing the best properties. Welding restores the properties of the base and of the transition zone substantially to those of heat-treated metal.
L. D. Cat

Central Sci. Res. Inst. Ferrous Metallurgy.

MIT

SOV-135-58-2-8/19

AUTHOR: Astaf'yev, A. S., Candidate of Technical Sciences

TITLE: Effect of Vibration Milling of Components of Electrode Coatings on Electrode Properties (Vliyaniye vibratsionnogo pomola komponentov elektrodnykh pokrytiy na svoystva elektrodov)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 2, pp 28 - 31 (USSR)

ABSTRACT: Investigations on the effect of vibration milling of components of electrode coatings on technological and mechanical properties of the most common electrode brands ("MEZ-04", "OMM-5", "TsM-7" and "UONI-13/55") are described. The author thanks N. N. Kruykovskiy for his advice in the work. An editorial note states, however, that no information is presented on the relations between the grain composition of the components and the chemical composition of the weld metal; that any marked advantages of the method

Card 1/2

Effect of Vibration Milling of Components of Electrode Coatings on Electrode Properties

are not indicated and that further investigation on this subject is imperative. There are 11 tables and 4 Soviet references.

ASSOCIATION: TsNIICHermet

Card 2/2 1. Electrodes--Coating

SOV-135-58-10-4/19

AUTHOR: Astaf'yev, A.S., Candidate of Technical Sciences

TITLE: Weldability of Oxygen Melted Converter Steel (Svarivayemost' konverternoy stali, vyplavlennoy s primeneniyem kisloroda)

PERIODICAL: Svarochnoye proizvodstvo, 1958, Nr 10, pp 12-14 (USSR)

ABSTRACT: Information is presented on results of experiments carried out at TsNIIChermet by V.S. Navoyev and V.I. Antonov on the weldability of three test casts of converter steel (compositions given in table 1) from the Novo-Tul'skiy metallurgicheskiy zavod (Novo-Tul'skiy Metallurgical Plant), and the Dnepropetrovskiy metallurgicheskiy zavod imeni Petrovskogo (Dnepropetrovsk Metallurgical Plant imeni Petrovskiy), obtained by blowing oxygen through cast iron. Investigations on the weldability of mild converter steel from the Yenakiyevskiy metallurgicheskiy zavod (Yenakiyevo Metallurgical Plant) were carried out in 1956 by B.S. Kasatkin and A.Ye. Asnis at the Institute of Electric Welding imeni Ye.O. Paton AS USSR. The performed experiments proved that there is no practical difference between converter rimming metal and open-hearth steel, automatically welded with Sv-08A wire

Card 1/2

Weldability of Oxygen Melted Converter Steel SOV-135-58-10-4/19

and OsTs-45 flux, with regard to mechanical properties, cold brittleness and proneness to mechanical aging. Higher toughness and lower temperatures of brittleness (-30°C) in converter steel are obtained by blowing pure oxygen through cast iron. Weld joints are prone to hot crack formation if the sulfur content in the base metal exceeds 0.05%. There are 4 tables and 3 Soviet references.

ASSOCIATION: TsNIIChermet

1. Steel--Welding 2. Welding--Test results

Card 2/2

25(1)

SOV/135-59-3-10/24

AUTHORS: Pridantsev, M.V., Doctor of Technical Sciences, and Astaf'yev, A.S., Candidate of Technical Sciences

TITLE: The Effect of Additives on the Development of Hot Cracks in Weld Metal (Vliyaniye primesey na razvitiye goryachikh treshchin v naplavlennom metalle)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 3, pp 18-22 (USSR)

ABSTRACT: The article presents a detailed description of experiments carried out in 1955-1957, at the welding laboratory of TsNIIChERMET, to investigate the effect of slight additions of various elements into welding wire of austenitic steel on the development of hot cracks in weld metal. The following conclusions were reached: 1) The presence of up to 0.014 % boron in welding wire increases the formation of hot cracks in weld metal; 2) an addition of up to 0.042 % cerium and 0.4 % calcium did not suppress hot cracks; the increase of the calcium concentration in the wire lead to an increased formation of hot cracks in welding under "BKF" flux, but not in welding under "AN-26" flux; 3) additions of up to 0.4 % of barium had practically no effect (with flux "AN-26");

Card 1/2

The Effect of Additives on the Development of Hot Cracks in Weld Metal

4) a slight content of lead (about 0.0017 %), tin (about 0.0016 %) and an increased concentration of sulfur in wire intensified the cracking. It is concluded that the wires, fluxes and electrode coatings are to be kept as free as possible of these elements. There are 6 tables, 10 graphs, 1 diagram and 8 Soviet references.

ASSOCIATION: TsNIIChERMET

SOV/133-59-6-30/41

AUTHOR: Astaf'yev, A.S., Candidate of Technical Sciences

TITLE: Weldability of Low Alloy Convertor Steels (Svarivayemost' nizkolegirovannykh konverternykh staley)

PERIODICAL: Stal', 1959, Nr 6, pp 553-560 (USSR)

ABSTRACT: An investigation of welding characteristics of low alloy steels, smelted from naturally alloyed Orsk-Khalilovo pig iron in basic convertors blown with technically pure oxygen at the Novo Tul'skiy Works (according to GOST 5058-57) and rolled into plates of various thickness have been carried out. In addition to the properties of the welding zone, the tendency of the welded metal to the formation of hot cracks during automatic welding and mechanical properties of welded joints made by automatic and manual welding have been examined. Similar examinations of plates 20 mm thick from two heats of steel 14G2 containing 0.41% of nickel were carried out. Chemical composition and mechanical properties of transverse specimens of steel in their rolled state - table 1; results of test for impact strength of the convertor metal at various temperatures - table 2;

Card 1/3

Weldability of Low Alloy Convertor Steels

the dependence of properties (angle of bend, hardness, impact strength, grain size) of welded zone of 15KhGN Steel on the power consumption (cal/cm) - Fig 1; the dependence of impact strength of welded zone of steel 15KhGN at various testing temperatures on welding conditions - Fig 3; welding conditions - table 3; cooling conditions for various steels and various welding conditions - table 4; microstructure of welded zone of steel 15KhGN at various cooling velocities - Fig 2; corresponding data as in Fig 1, 3, 2 for steel 10KhG2N - Fig 4, 6, 5; the same for steel 10KhG2SN - Fig 7, 9, 8; the dependence of impact strength of welded zone of steel 14KhGSN on testing temperature and welding conditions - Fig 10; the dependence of properties of welded zone of steel 14KhG2 on the power consumption - Fig 11; microstructure of welded zone of steel 14KhG2 at various cooling temperatures - Fig 12; the dependence of the impact strength of welded zone of steel 14KhG2 on welding conditions, mean indices of mechanical

Card 2/3 properties of the welded metal and of welded joint of

Weldability of Low Alloy Convertor Steels

low alloy steels - table 5. On the basis of the results obtained a wide testing of the steels investigated in welded structures is recommended. There are 13 figures and 5 tables.

ASSOCIATION: TsNIIChERMET

Astakhov, A.S.

PHASE I BOOK EXPLOITATION SOV/3629

Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii

Spetsial'nyye stali i splavy (Special Steels and Alloys) Moscow, Metallurgizdat, 1960. 488 p. (Series: Its: Sbornik trudov, vyp. 17) Errata slip inserted. 4,000 copies printed.

Sponsoring Agencies: Institut kachestvennykh staley; Gosudarstvennyy planovyy komitet Soveta Ministrov SSSR; and Glavnoye upravleniye nauchno-issledovatel'skikh i proyektnykh organizatsiy.

Ed.: M.V. Pridantsev; Ed. of Publishing House: A L. Ozeretskaya; Tech. Ed.: V.V. Mikhaylova.

PURPOSE: This book is intended for engineering and research personnel in the metallurgical and machine-building industries.

COVERAGE: This book contains papers on the physical properties of special industrial steels and alloys. Individual papers treat: the problem of flake formation in steels and preventive measures, the effect of alloying additions and heat treatment on the struc-

Card 1/6

ture and properties of steel, steel corrosion and preventive measures, and the properties of chromium-nickel alloys. There are 120 references: 87 Soviet, 22 English, 9 German, and 2 French.

TABLE OF CONTENTS:

Special Steels (Cont.)

Special Steels (Cont.)

S/125/60/000/06/03/007

AUTHORS: Astaf'yev, A.S., and Ivanov, B.Ye.

TITLE: Welding Cast Nichrome Alloy X20H80T (Kh20N80T) of 25 mm Thickness

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 6, pp 48 - 54

TEXT: The "Kh20N80T" (or ЭИ 435 [EI435]) is scaleproof, one of the alloys extensively used as cold-roller sheet or thin-walled castings for miner stresses. It is weldable by different methods [Ref. 1-3]. For 25-mm thick castings automatic welding is recommended with ЭИ 437A (EI437A) welding rods in combination with oxygen-free "АНФ-5" (ANF-5) flux, but in construction assembly welding with flux is difficult. This article gives the results of experiments carried out to develop special electrodes for use without flux, i.e. for manual arc welding. The information includes the chemical composition of all materials experimented with: the base metal, electrode rods, wire coatings. As the result, electrodes from "ЭИ 868" (EI868) (also named "ВЖ-98" [VZh98]) with ЦЧМ-3 (TsChM-3) coating are recommended for electric arc welding of 25 mm thick EI435. Welding rods from EI435 are not recommended for use, they caused hot cracking; "ЭИ873" (EI873) and "ЭИ 437Б" (EI437B) rods with basic coating did not provide stable mechanical

Card 1/2

Welding Cast Nichrome Alloy X20H80T (Kh20N80T) of 25 mm Thickness

strength of welds in assembly. Besides, their content of aluminum and titanium necessitated development of special coatings, as the conventional basic coating gave a slag crust, which was not easily removable. The composition of the "Kh20N80T", the rods recommended and the coating are given in tables (Tables 1 and 2). There are 6 tables, 4 figures and 7 Soviet references.

ASSOCIATION: TsNIIChYERMET im.I.P.Bardina (TsNIIChYERMET imeni I.P.Bardin)

SUBMITTED: December 31, 1959

✓B

ASTAF'YEV, A.S., kand.tekhn.nauk

Mechanical properties of the heat-affected zone of 12MZ steel.
Sbor. trud. TSNIICHM no.17:51-63 '60. (MIRA 13:10)
(Steel--Welding) (Metals, Effect of temperature on)

S/125/60/000/012/014/014
A161/A030

AUTHOR: Astaf'yev, A.S.

TITLE: At the Coordination Council for Welding

PERIODICAL: Avtomaticheskaya svarka, 1960, No. 12, p. 89

TEXT: In accordance with the decision of the Coordination Council for Welding, the Institut kachestvennykh staley TsNIIChM im. I.P. Bardina (The Institute of High-Grade Steels of TsNIIChM imeni Bardin) and the Institut metallurgii im. A.A. Baykova AN SSSR (The metallurgical Institute imeni Baykov of the Academy of Sciences of the USSR) convened 3 - 4 June, 1960 a conference on welding of austenite steel grades of the 1Х13Н18В2БР (1Kh13N18V2BR) type - ЭИ695 (EI695) ЭИ695р (EI695r) and ЭИ726 (EI726).; 1' delegates from 11 organizations took part. Information was presented on the results of studies of manual and automatic welding of heat-resistant austenite steels. The Institut elektrosvarki im. Ye.O. Patona AN USSR (The Electric Welding Institute imeni Ye.O. Paton of the Academy of Sciences of the UkrSSR) has developed and tested new pure austenite welding wire alloyed with molybdenum, manganese, tungsten and titanium. This composition eliminates hot cracks in the automatic welding of EI695r and EI726 steel of a

Card 1/2

maximum depth of 15 mm. The Electric Welding Institute revealed the favorable effect of electro-slag remelting on the hot cracking resistance of high-alloy austenite steel in the heat affected zone in welding, but it was not possible to eliminate hot cracks completely in EI726. It is obvious that the composition of this steel must be modified to improve the weldability. The AZh-13-15 (AZh-13-15) and AZh-13-18 (AZh-13-18) electrodes suggested by TsNIICHM and IMET AN SSSR had been used for experiment boilers from EI695r steel at the Podol'skiy zavod im. Ordzhonikidze (Podol'sk Plant imeni Ordzhonikidze), TsKTI im. Polzunova (TsKTI imeni Polzunov), KhTGZ im. Kirova (KhTGZ imeni Kirov) and Venyukovskiy armaturnyy zavod (Venyukovo Fittings Plant). The electrodes gave satisfactory resistance of the weld metal to hot cracking in the welding boiler and turbine parts from EI695r steel of – maximum 60 mm thickness. The welds are only slightly susceptible to emprittlement at service temperature. The long-time strength of welded joints made with these two electrode types is the same as for EI695r base metal. They have yet to be modified for shop and on the spot application. The conference recommended steps for further introduction of the AZh-13 -15 and AZh-13-18 electrodes into use in industry.

ASTAF'YEV, A.S., kand.tekhn.nauk

The weldability of steel. Svar. proizv. no.2:6-8 F '63. (MIRA 16:2)

1. Institut novoy metallurgicheskoy tekhnologii imeni I.P.Bardina.
(Steel—Welding)

L 10520-63 EWP(k)/EWP(q)/EWT(m)/BDS--AFFTC/ASD--Pf-4--JD

ACCESSION NR: AP3000960 S/0135/63/000/005/0006/0009

AUTHOR: Astaf'yev, A. S. (Candidate of technical sciences); Gulyayev, A. P. (Doctor of technical sciences); Shcherbakov, O. B. (Engineer)

TITLE: Effect of alloying elements on weldability of high-strength steels

SOURCE: Svarochnoye proizvodstvo, no. 5, 1963, 6-9

TOPIC TAGS: high-strength steel, weldability, heat-affected zone, alloying element, cooling rate

ABSTRACT: The effect of C, Mn, Si, Cr, and V on the weldability of high-strength bainitic steels, primarily on mechanical properties of the heat-affected zone, has been investigated. Small heats containing C from 0.19 to 0.37%, Mn from 1.0 to 2.3%, Si from 0.49 to 2.3%, Cr from 0 to 2.4%, and V from 0.12% melted in a laboratory arc furnace were rolled into plates 5 mm thick, annealed at 1000C, and air-cooled. Plate specimens were subjected to simulated welding cycles (rapid heating to 1350C and cooling with rates varying from 0.15 to 600C/sec) in the IMET-1 machine. It was found that by limiting the contents of C to 0.24 to 0.25%, Mn and Cr to 1.5 to 1.6% each, and Si to 0.5%, a

Card 1/2

L 10520-63
ACCESSION NR: AP3000960

satisfactory strength in the heat-affected zone (approximately 100 kg/mm^2) could be obtained even with slow cooling (0.1C/sec) from the peak temperature of the welding cycle and without excessive embrittlement even with rapid cooling. At higher contents the tensile strength of the heat-affected zone increases considerably with cooling rates over 1.0C/sec, but the ductility drops to a very low value; for example, reduction of area drops to about 5%. Si is especially harmful; an increase in Si content to 0.7% makes the heat-affected zone brittle even at low cooling rates. Orig. art. has: 10 figures and 1 table.

ASSOCIATION: TsNIIChM im. Bardina

SUBMITTED: 00 DATE ACQ: 11Jun63 ENCL: 00

SUB CODE: MA, ML NO REF SOV: 000 OTHER: 000

mcs/cd
Card 2/2

ASTAF'YEV, A.S., kand.tekhn.nauk; PETUNINA, Ye.V., kand.tekhn.nauk

Quality of welding joints in low-alloy steels modified by nitrides. Svar. proizv. no.10:3-6 O '63. (MIRA 16:11)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni Bardina.

ASTAF'YEV, A.S.; GULYAYEV, A.P.; SHCHERBAKOV, O.B.

Effect of addition alloys on the properties of the heat-affected zone of a weld joint in high-strength reinforcement steel. Sbor. trud TSNIICHM no.35:132-142 '63. (MIRA 17:2)

ASTAF'YEV, A.S.; SHCHERBAKOV, O.B.

Effect of alloying elements on the properties of 18G2 steel during the welding cycle. Avtom. svar. 17 no.4 32-37 Ap '64 (MIRA 18:1)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni I.P.Bardina.

ASTAF'YEV, A.S., kand.tekhn.nauk; PRIYANTSEV, M.V., doktor tekhn.nauk

Effect of welding conditions on the fatigue strength of certain low-alloy steels. Stal' 24 no.2:157-163 F '64. (MIRA 17:9)

L 16662-65 EWT(m)/EWP(w)/EWA(d)/EWP(v)/EWP(t)/EWP(k)/EWP(b) Pf-4 MJW/JD/HM

ACCESSION NR: AP4042217 S/0135/64/000/007/0001/0004

AUTHOR: Astaf'yev, A. G. 18 B

TITLE: Results of testing weld metal for hot cracking strength 18

SOURCE: Svarochnoye proizvodstvo, no. 7, 1964, 1-4 18

TOPIC TAGS: hot crack, weld metal, deformation rate, bend test, polished specimen, rolled specimen, low alloy steel, openhearth steel 18

ABSTRACT: The author makes a comparative study of data concerned with the resistance of weld metal to hot cracking during the arc welding of low-carbon and low-alloy steel by standard electrodes. Bending tests with an invariable rate of deformation were applied to the butt joint of 100 x 45 mm specimens having a thickness of 12 mm. St.3kp and St.3 open-hearth steel as well as 14KhGS low-alloy steel were used. The absolute value of the critical rate of deformation of the weld metal was found to depend on welding conditions, the thickness of the specimens and the surface condition. In polished specimens, the critical rate of deformation was higher than in specimens made of the same steel sheet but having a rolled surface. The author concludes that comparability is only possible with invariable 18

Card 1/2

L 16662-65
ACCESSION NR: AP4042217

testing conditions. Changes in the Mn : S ratio in the built-up metal indicate the character of changes which occur in the critical rate of deformation provided welding conditions are invariable and the diameter of the electrode is identical. Any increase in the Mn : S ratio accelerates the critical rate of deformation. However, this ratio does not reflect other facts that influence the weld metal during crystallization. Thus, the critical rate of deformation can only be determined by direct testing of the specimens. Tests have shown that changes in the contents of the electrode coating largely affect deformation facilitating the selection of the optimal composition. Orig. art. has: 2 figures and 4 tables.

ASSOCIATION: TsNIICHM imeni I. P. Bardina

SUBMITTED: 00 ENCL: 00

SUB CODE: MM NO REF SOV: 004 OTHER: 000

Card 2/2

AST[illegible] t-kand. tekhn. nauk; MAKOVEV, V.S., inzh.

[illegible] of 18G2 and 18G2T low-alloy steel. Svar. proizv. no.3: [illegible] Mr '64. (MIRA 18:9)

1. Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii imeni I.P.Bardina.

L 06259-67

ACC NR: AP6030976

the lateral faces of the diode caused a simultaneous decrease in the temperature of the p-n junction. The state of the surface substantially affects the condition of light generation in the p-n junction, and treatment of the diode surface causes a marked change in the course of the watt-ampere characteristic. It is concluded that a semiconductor quantum generator in the working state can be divided into two regions - the active, luminous region of the p-n junction surrounded on the side of all lateral faces by a passive thermal envelope. This condition must be taken into account in solving problems involving the heating up of p-n junctions. Orig. art. has: 2 figures.

SUB CODE: 20/ SUBM DATE: 23Dec65/ OTH REF: 001

Card 2/2

ASTAF'YEV, A. V.

Meteorologicheskiye faktory, ikh vliyaniye na radiooborudovaniye i tipovyye metody sootvetstvuyushchikh ispytaniy (Meteorological Factors, Their Influence on Radio Equipment, and Typical Methods of Corresponding Tests) Ministry of Communications Equipment Industry USSR, Moscow, 1948, 68 pages

SO: U-3039, 11 Mar 1953

6(4) PHASE I BOOK EXPLOITATION SOV/2491

Astaf'yev, Andrey Vladimirovich

Okruzhayushchaya sreda i nadezhnost' radiotekhnicheskoy apparatury (Conditions Affecting the Reliability of Radio Equipment) Moscow, Gosenergoizdat, 1959. 231 p. 11,000 copies printed.

Ed.: V. I. Shamshur; Tech. Ed.: N. I. Borunov.

PURPOSE: This book is intended for designers in the radio electronics industry and students in advanced courses in radio engineering departments.

COVERAGE: The book reviews climatic and atmospheric conditions and other factors affecting the reliability of radio equipment. Causes and prevention of failures of radio equipment are discussed, and changes in properties of materials from which radio apparatus are made are analyzed. The effect of moisture, heat, cold, light, dust, and sand on equipment is described. Damage to capacitors, transformers, chokes, and induction coils is reviewed. Problems dealing with preservation and transportation

Card 1/6

ASTAF'YEV, Andrey Vladimirovich; MYAGKOV, M.M., red.; IGNAT'YEV, V.A., tekhn. red.

[Well-organized production in enterprises] Kul'tura proizvodstva na predpriiatiiakh. Moskva, Profizdat, 1962. 63 p. (MIRA 15:7)

(Industrial hygiene) (Factory management)

ASTAF'YEV, Andrey Vladimirovich; TURKEL'TAUB, R.M., red.

[Ambient media and the reliability of radio equipment] Okruzhaiushchaia sreda i nadezhnost' radioteknicheskoi apparatury. Moskva, Energiia, 1965. 359 p. (MIRA 18:1)

L 64008-65 EWT(d)/FSS-2/EWT(1)/EEC-4/EEC(b)-2/EWA(h)

AM5013081 BOOK EXPLOITATION UR/ 621.3.019.38 20 B-41

Astaf'yev, Andrey Vladimirovich 55

Environment and reliability of radioengineering equipment (Okruzhayushchaya sreda i nadezhnost' radiotekhnicheskoy apparatury), 2d ed., Moscow, Izd-vo "Energiya", 1965. 359 p. illus., biblio. 10,500 copies printed.

TOPIC TAGS: radio equipment, radio engineering, climatic condition, reliability theory

PURPOSE AND COVERAGE: The book examines problems which concern the influence of environment on the reliability of radio equipment. Climatic conditions in which radio equipment can be located and operated are described. The author analyzes typical breakdowns of radio parts and materials. Much attention is given to the physical processes of interaction between the materials and environment. The last part of the book is devoted to methods of calculating reliability and general problems of radio equipment construction which take environment into account. The book is intended for designers who work in the radioelectronics industry and students of radioengineering faculties who are enrolled in advanced courses.

Card 1/2

L 64008-65

AM5013081

TABLE OF CONTENTS (abridged):

SUB CODE: EC, ES SUBMITTED: 24Dec64 NO REF SOV: 105

OTHER: 038

Card 2/2

ASTAF'YEV, A.V.; KONSTANTINOV, Ye.A.; MISHAKOV, Ye.S.; PEKARSKIY, S.Ya.; DOROFEYEV, V.A., tekhn. red.

[Reference catalog on measuring instruments] Katalog-spravochnik izmeritel'nykh priborov. Moskva, Biuro tekhn. informatsii, 1952. 163 p. (MIRA 16:8)

1. Russia (1923- U.S.S.R.) Ministerstvo promyshlennosti sredstv sviazi. (Electric measurements)
(Telecommunication--Equipment and supplies)

[illegible], V.Ye. [illegible]; [illegible], M.N., [illegible]

Concentration and specialization in the electric equipment industry in the Ukraine. Energ. i elektrotekh. prom. no.6:7-10 O-D '63. (MIRA 17:10)

ASTAF'YEV, B.A.; BELOVA, Ye.I.; SMIRDIN, P.M.

Drying wood impregnated with sodium-chloride solution. Der.prom. 8 no.3:9-10 Mr '59. (MIRA 12:4)

1. Nerekhtskaya kabluchnaya fabrika Kostromskogo sovnarkhoza.
(Lumber--Drying)

ASTAF'YEV, B. A. (First Lieutenant of the Medical Service)

"Characteristics of the Diagnosis of Opisthorchosis in Servicemen"

Voyenno-Meditsinskiy Zhurnal, No. 10, October 1961

ASTAF'YEV, B.A., starshiy leytenant med. sluzhby

Feature of the diagnosis of opisthorchosis in servicemen. Voen.-med.zhur. no.10:91 O '61. (MIRA 15:5)
(LIVER FLUKE)

PROL'TSOVA, A.Ye.; ASTAF'YEV, B.A.; KONOVALOVA, L.M.

Search for specific trichinelliasis therapy. Report No.1: Acrichine, chlorophos, monomycin and a growth promoting substance of petroleum origin in experimental trichinelliasis of rats. Med. paras.i paraz.bol. 34 no.4:387-389 Jl-Ag '65. (MIRA 18:12)

1. Klinicheskiy otdel i laboratoriya biologii gel'mintov i spetsificheskogo deystviya preparatov Instituta meditsinskoy parazitologii i tropicheskoy meditsiny imeni Ye.I.Martsinovskogo Ministerstva zdravookhraneniya SSSR, Moskva. Submitted March 21, 1965.

БЛИЗНЮК, В.М.

BLIZNYUK, V.M., kand.med.nauk; ASTAF'YEV, D.A.

Immediate and late results of vesicosigmoid anastomosis. Urologiia 23 no.2:8-12 Mr-Ap '58. (MIRA 11:4)

1. Iz urologicheskogo otdeleniya (zav. T.N.Tret'yakova; konsul'tant - kandidat meditsinskikh nauk V.M.Bliznyuk) Sverdlovskoy oblastnoy klinicheskoy bol'nitsy (glavnyy vrach M.S.Levchenko)

(BLADDDER, surg.
vesico-sigmoid anastomosis, immediate and remote results (Rus))
(COLON, surg.
same)

S/133/60/000/008/017/017/XX
A054/A029

AUTHORS: Dolgalev, V. A., Astaf'yev, F. S., Tyukalov, P. A., Mustyukov, I. S., Engineers

TITLE: Automatic Control of the Surface Purity of Steel Strips

PERIODICAL: Stal', 1960, No. 8, pp. 734-735

TEXT: At the MMK steel strips are cleaned in a machine designed by the NIIKhIMMASh, operating with an alkaline electrolyte at a maximum speed of 5 m/sec. The equipment, however, only removes grease from the strip surface and not any impurities caused by carbon, iron and iron oxides; moreover, a close check on the strip surface cleaned with this machine is only possible with laboratory instruments, while control during production is rather primitive (with paper or cotton) and is not sufficiently accurate, as the strip cannot be controlled along its entire surface, nor is it possible to make up for inadequate degreasing. Due to these shortcomings, about 100-150 tons of steel strips per month could not be tinned in this plant. Incomplete cleaning of the strip surface became of special importance when manual sorting was replaced by automatic sorting, as the latter only signals perforations in the strips and deviations in their thickness, but

Card 1/3

Automatic Control of the Surface Purity of Steel Strips

does not reject strips with impurities. In order to eliminate these drawbacks an apparatus for the continuous and automatic control of the strip surface (a so-called "surface-indicator") was designed in the NIIKhIMMASh. This apparatus consists of four transmitters and schemes for selecting the maximum signal for impurities. The schemes and the transmitters form one unit. The essential part of the apparatus is a measuring device, defining the quantity of light reflected from the controlled surface with the aid of a photoresistor. The rays of light emitted by the electric lamps pass through a light filter and are reflected from the strip surface. Next they strike the photoresistor which is connected to the arm of the measuring bridge. When the rays are reflected from a part of the surface covered with impurities, the amount of light falling on the photoresistor decreases, thus increasing the ohmic resistance. The entire width of the strip is controlled by this apparatus which is mounted before the coiling machine. As the strip surface passing under the transmitters is not covered uniformly with impurities, a logistic scheme (ИЛИ = ILI) is applied in determining the maximum amount of impurities on any part of the strip surface (Fig. 4). When applying four positive potentials (U_1, U_2, U_3, U_4) of different values at the four outputs (a, б, в, г = a, b, v, g) the voltage at the output U_{out} [Abstracter's note: subscript out is

ASTAF'YEV, F.S.

Muffle durability in bell furnaces. Metallurg 6 no.2:29-31 F '61. (MIRA 14:1)

1. Zamestitel' nachal'nika tsekha zhesti Magnitogorskogo metallurgicheskogo kombinata.
(Furnaces, Heat-treating)